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ABSTRACT

This paper examines the educational philosophy underlying Waldorf Education, focusing on Rudolf Steiner's concept of "vital" or etheric energy and comparing Piaget's and Steiner's stages of cognition. The paper begins with a discussion of school readiness and the trend toward lowering the school entry age, and maintains that this trend is supported by a selective and sometimes erroneous interpretation of child development research. This part of the paper discusses the negative impact of forced-formal learning on children before they are ready, such as reducing learning potential and increasing attention deficit disorders. The second part of the paper focuses on indicators of school readiness and maintains that the lack of a coherent theory of human and cognitive development contributes to problems in identifying readiness. The third part compares Steiner's cognitive theory to Piaget's, suggesting the former has a biological scientific basis but also encompasses the relationship between body and mind. Steiner's concept of etheric energy is explained as providing a psychosomatic linkage between physical and intellectual development, and as an explanation and cause for sequential stages of cognitive development. In this part, it is argued that as a result of inappropriate curricula, activities, and assignments, children's energy forces are displaced and atrophy prematurely, causing damage to their development. The fourth part explores relationships between physical maturation and cognitive development and presents the rationale for the criterion for first grade admission in the Waldorf School as physical changes corresponding with onset of concrete operational thinking, specifically, second dentition or permanent teeth. The fifth part of the paper applies etheric forces to the educational process and explains Steiner's stages of intelligence or consciousness. Contains 71 references. (KB)

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WALDORF EDUCATION: THEORY OF CHILD DEVELOPMENT AND TEACHING METHODS

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ED 420 418

The concept of readiness is one of the continuing, complicated issues that society in general, and schools in particular deal with in making decisions for the education of children. What exactly do we mean by readiness? How do we determine when a child is ready for school? When he is in school, how do we determine when a child is ready to learn? How do we know he is ready to learn what has been determined to be important for him to learn? These are only a few of the question that must be asked and which will be discussed in this chapter. The information gathered from research studies will be examined and reviewed. The philosophy of a school and the appropriate teaching and learning psychologies are based in large part on the underlying theories of readiness that are selected. These theories are the principal indicators found in different school systems world wide. The purpose of the paper is to explicate Steiner's concept of "vital" or etheric energy which undergirds his theory of learning and readiness. A comparative analysis will be drawn between Piaget's and Steiner's stages of cognition.

In this hurry-up society, can anything wait? This was the question posed by Jim Grant, a school principal in his

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video taped seminars, "Do you know where your child is?" He was referring to children's readiness for school.[1] The criteria for when children should begin school have been arbitrarily set by social and legal mandates. In the United States each of the 50 states establishes its own compulsory attendance laws. Some states require attendance at age five, several at age eight; the mean is age six. In England school entrance is age five, Holland and Germany age six, and the U.S.S.R. and the Scandinavian countries age seven. Now it is tradition. Currently, the national school reform movement in the United States has recommended a further lowering of the school entrance. This is in addition to mandatory kindergarten being extended to a full day, and readiness preschool programs for three year old. Many states have legislated such reforms. Research on child development and the facts on school readiness and the adverse effect of early formal schooling have and are being ignored by policy makers for traditional, political or social reasons.

This trend can be traced back at least four decades when in the 1940's and 50's the emphasis was on the social and personal development of the child. With Russia's launching of Sputnik in 1957, not only was the American educational system thrust into the space age race, but the affective social aspects of child development were jettisoned in favor of cognitive learning and intellectual achievement. The child became a national resource. Just as

today, American schools were perceived as inadequate and outdated. Both child and school had to catch up. The curriculum was revamped to meet the needs of society, not the child. Math and science taught in the upper grades were pressed into the lower and primary grades. Technology and mechanical audiovisual aids were in. New math (set theory), new science and languages were taught to young children via teaching machines and television.

The Civil Rights Movement of the 1960's gave the early academic movement further impetus. Preschool education became a national issue in 1965 with Project Head Start, a part of President Johnson's "War on Poverty." Millions of socially disadvantaged children profited socially and, perhaps, developmentally, but the question of cognitive achievement remains a controversial issue even today.

Separate evaluations of Headstart programs by a number of researchers concluded that despite great expenditures of time and money sustained achievement and IQ gains were disappointing. Although large achievement gains and elevated IQ's were evident "during the preschool years, they did not persist in the primary grades."[2]

Contrary to the less than encouraging performance of Headstart children, the inclusive instructional-type preschool program became the standard for preschool education. Controlled by social forces, policy makers had the attitude "don't confuse us with the facts," regarding what is known about child development. Hence, the changing

social, political and economic needs of society took precedence over the needs of the child.

Socially, the current trend is to free working, divorced and single parents, e.g., over 50% of United States women today have jobs outside the home, 22.5% of children live in single parent homes, and two salaries are needed to support a household. Politically, parents and special interest groups pressure elected officials and corporations to provide day care programs; economically, the service-oriented economy creates career opportunities for women in the workplace. There is "big money" in early childhood education, e.g., there are the television programs such as "Sesame Street" and "Electric Company", the proliferation of private preschools, some of which are nationally franchised like "McDonalds' and Kentucky Fried Chicken", and the million dollar industries that produce materials, equipment and publications for the preschool enterprises and parents.

Consequentially, early schooling has become an economic need, a national movement, a social consensus, undergirded by the themes,"Earlier is better" and "School cannot wait," supported by the selective and sometime erroneous interpretation of child development research and how children learn by nationally known authorities in psychology and education. For instance, James McV. Hunt concluded that the child's IQ is malleable (contrary to the findings of psychometricians) which can be accelerated with the proper

environment.[3] Jerome Bruner hypothesized "that any subject can be taught effectively in some intellectually honest form to any child at any stage of development."[4] And Benjamin Bloom claimed that a child by the age of four years has attained fifty percent of its intelligence.[5]

These proclamations have little or no basis in fact nor support in child developmental research. Nevertheless, they not only influenced educators' and parents' view of children's learning potentials but they blur the whole issue of readiness. The proliferation of such popular books as "Give your Child a Superior Mind", "How to Raise a Brighter Child" and "Teach Your Child to Read in 60 days" attest to the cultural forces driving the formal preschool movement.[6, 7, 8].

Computer instruction for pre and early schools is now common. The writer recently visited a Headstart Program where three and four year olds with varying degrees of restlessness and success were pounding the keyboard in an attempt to use "LOGO", a turtle geometry program. Fringe elements of the movement have gone to the absurd. Recently, one of the authors heard a radio advertisement selling an apparatus, called " a fetuscope", through which a pregnant mother could teach her yet unborn child music, language, reading, math or whatever. One of the reasons schools are forcing children to work beyond their developmental readiness is the drive toward organizational efficiency and

a lack of understanding and application of child development principles.

The issue is not so much preschool education, day care or even school entrance age, but the type of education children receive in these programs, i.e., whether learning instruction is forced, formal and intellectual or whether it is based on their maturational needs and unique styles of learning. Elkind says,

> The miseducation of young children, so prevalent in the United States today (and traditionally so in Europe. Why the tripartite* educational systems in England, Germany, etc?), ignores the well founded and noncontroversial differences between early childhood education and formal education.[9]

As indicated, the Waldorf Schools have not only emphasized this difference in the kindergartens and primary grades, but extended the practice into the upper elementary grades. Steiner, Ilg and Ames, Rohwer, Moore and Moore, and other have cautioned about the adverse effects of forced-formal learning on children before they are ready. Current research supports their position.

Studies show that induced cognitive learning before a child is maturationally ready will reduce his learning

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*Recent reforms in British education have seen the decentralization of responsibilities from the Local Education Authorities (LEA) to each school. Teachers are collectively planning curricula and course syllabi. (Michael, B.G." All is change in Britain's School," Phi Delta Kappan, May 1988, p. 691-92.)

potential.[10] Keister found that although pre six year olds made normal progress in reading, it disappeared over the summer months, and, they were retarded in reading after grade two.[11] Later researchers found similar results.[12] A recent review of the research by Uphoff and Gilmore suggested that the damaging consequences of schooling for children who are not developmentally mature may continue throughout their school careers.[13]

Another possible symptom of induced learning that is being diagnosed by teachers and special educators is the Attention Deficit Disorder (ADD), marked primarily by restlessness, impulsiveness and inattentiveness. Two subcategories of ADD have been identified--hyperactivity and learning disability.[14] It has become a legal issue in regards to the classification of ADD child as handicapped. Although special educators have not identified ADD with stress as it relates to early formal learning, Elkind and others have diagnosed its origin in forcing the immature child to: 1) learn narrow categories of intellectual information, 2) be separated from their parents, 3) adapt to an unfamiliar environment--teachers and children, and 4) to learn school rules and regulations.[15] As a result the child is overwhelmed by the many demands made on him. In the preschool years the child sees things globally not in narrow categories or analytically. About the seventh year or later, a dramatic acceleration of cognitive growth begins and development into a series of cognitive systems by which

the child moves from concrete to symbolic understanding of the world and his experiences. (Piaget's stages of development will be discussed later.)

A substantial body of research shows children should not begin formal academic instruction until 7, 8 or even 11 years of age.[16] Rowher's investigations demonstrated to him that formal-instruction, containing abstract content, could and should be delayed until the early adolescent years.[17] Moore and Moore recommended that late starters should skip the first grade and start formal schooling in the second or third grade with their chronological peers.[18]

However, chronological age is not a reliable index of school readiness. For instance, a child's intersensory development--sight and hearing-- is not fully developed until age 8 or later. Before age 7 a child has perceptual difficulties; he often cannot distinguish visually between b and d and q and p. He cannot hear the difference between b an d; and m an n; g and k; s and z, etc.[19] Anthropometric studies of the physical and motor maturity of first graders showed that unsuccessful pupils had lower maturation levels than their successful peers.[20]

Morency and Wepman suggested that children who are not neurophysiologically ready (maturity of the central nervous system--auditorily, visually and who possess intersensory coordination) will not only not do well in a traditional classroom but will probably not catch up to their more mature peers. Full perceptual processing ability may not

occur until age nine.[21] Visual development, e.g., the ability to decode letters, shapes and words serially essential to most reading programs, occurs later than auditory development.[22] Most young children learn more effectively through aural as opposed to visual presentation, which doesn't mature until after the third grade.[23] Academic disabilities, in many cases, are the result of forcing children to sensorial-dependent information before they are perceptually ready.

Moore and Moore in Better Late Than Early developed a holistic index for school readiness. Their "Integrated Maturity Index" (IMF) takes into account: 1) chronological age, accumulation of experiences, 2) cognitive ability, understanding of experiences, 3) acquired knowledge and the use of language, 4) physical development and anthropometric maturity, 5) perceptual discrimination, and 6) a readiness to read together with other related factors.[24] Others consider a child ready for formal schooling when the coordinated integration of these readiness factors reach their optimum level of maturation then the child is ready, motivated and less stressed, and overwhelmed by school than his less mature classmates. IML is generally not reached until ages 8-10 by most children. A recent analysis of the findings of educators and child development specialists support the importance of maturity as a key predictor of school success. They recommend a transitional-readiness program for immature first graders.[25]

Child developmental research suggests that forcing a child to learn a skill or to master a subject before he is maturationally ready is ineffective and inefficient. It takes him longer to learn it, and the learning is less complete. As indicated, formal-instructional preschool programs are not the most propitious way of preparing children for school. A longitudinal study comparing the effects of parent style vs. preschool experience on children's later verbal ability found that although preschool experience was a significant predictor of verbal achievement scores, its power was insignificant and small when compared with the mother's education and influence. Even with socially-disadvantaged children, the initial gains of improved intellectual capacity, i.e., higher IQ scores were not sustained beyond the second grade. Although they did appear to have improved scholastically and reduced the frequency of special education placement [26] Moore, et.al in School Can Wait concluded that the need for academic instruction in the early years "is open to question since no conclusive evidence suggests lasting effects of preschool instruction."[27] Seven and 8 year olds can learn the material with much greater efficiency and far less stress and frustration. Children who begin reading at age 6 one year ahead of their class peers, are often one year behind them in reading achievement at the end of the seventh grade.[28] Not only do later school beginners surpass those who started

school at an earlier age, but the latter group seems to have greater emotional and social adjustment problems.[29]

A national study of the school success of 300 children who entered school from two to five years later than the required entrance age of six or younger had no difficulty completing elementary school at the same age as the early entrees. Other studies show that late starters "quickly catch up and sometimes pass their early and regular starter peers. The former group, according to Moore, "Generally excel in behavior, sociability and leadership."[30] Can one infer from this that the number of years spent in school affect children's behavior and altitudes? Earlier international and national studies on pupil achievement found concomitant outcomes that "the earlier children went to school, the more negative their attitudes toward school."[31] Also the grade retention rate for immature learners is higher than that of somewhat older learners.[32]

Forced learning can cause frustration, anxiety, alienation, and loss of interest in learning. The learning is not only inefficient or "pseudolearning," but research indicates a resultant lowering of learning capacity.[33]

In The Hurried Child, Elkind adds that hurrying children into academics to acknowledge individual differences..."before they have the request mental capabilities" may cause them to see themselves as failures and worthless. A series of unsuccessful school experiences can lead to an inferiority complex, a lack of control over

one's life or environment"a learned helplessness".[34] Another consequence of premature induced learning and the hurry-up process is the premature labelling of children as "learning disabled," "attention deficit disordered", "handicapped" or "essential track" when their difficulty may be a perceptual or linguistic problem. Their placement in a special needs class or program because they cannot speak English could be traumatic. Several years ago, Illinois legislatures questioned the inordinate number of children being classified as handicapped.[35]

Child development research is clear as to the limited benefits of formal, induced learning on the achievement, learning and cognitive attainment of preschool and elementary school children. What ever gains may accrue they are outweighed by the harm done to their self concept, motivation and intellectual development.

Readiness

Educators speak about school readiness in generalities, e.g., as "the amount of learning that can transfer to new learning," or, "the child must be mature in terms of physical, mental, and emotional growth and social maturity." However, none of these points of view really explains readiness or the possible damaging effects of early schooling.

As Arthur Jensen states, these "disagreements [regarding readiness] arise only when we try to explain

readiness."[36] The reason for the disagreement as to when a child is or is not ready for schooling is that we lack a sound theory of human development, i.e., we do not understand the processes of physical and mental development and their relationship. We therefore have no agreed-upon concept of readiness.

Moore and Moore, as mentioned earlier, have, perhaps, the most comprehensive definition of readiness with their "integrated maturity level (IML)" index which includes emotional, psychomotor, perceptual and cognitive developmental variables, within the child, reaching an optimum peak in maturational readiness. He should now be ready for typical school experience.[37] But Rohwer, et.al. stated "the fact that maturation contributes to development cannot be denied but neither can the uncertainty over its relative importance to intellectual development."[38] If we don't understand how the child arrives at the stage of readiness and its relevance to cognitive development then how do we really know when he is ready for formal learning.

One of the problems is that we do not have a coherent theory of human and cognitive development. Mental and physical development are two separate phenomenon. Since the time of ancient Greece and Plato, it was believed the mind dominated the body. The 17th century philosopher and mathematician, Rene Descartes, posed the theory of the equality of the nonmaterial, indivisible mind and the material, divisible body. Each had influence over the

other. Although the thoughts, passions and consciousness, etc. of the mind could influence the mechanistic muscles, bones and nerves of the body, the latter acted on its own.[39] Each was responsible for its own functions. This distinction between mind and body is prevalent today. However, psychosomatic medicine is making inroads into Descartes' theory. For example, stress and anger can cause symptoms of high blood pressure and heart disease. Conversely, bodily chemical imbalances can influence one's personality and mental state.[40]

Psychological and physiological development are thought to be two ways of viewing human development. The physiologist is primarily concerned with the organic, somatic, and physical aspect of man, whereas the psychologist is concerned with the mental, psychological, and motivational aspects of development. In regards to offering a unifying or total theory of human development, the two fields have remained separate and impotent. Attempts have been made to develop a mental/physical conceptual model of human development using such theories as vitalism, mechanism, and the organismic and field theories. These theories or models do not explain the relationship between physical and mental growth, and mental maturation and readiness. One limitation of the theories has been the attempt to apply concepts that explain the inorganic world to the organic world. It is becoming

increasingly evident that the forces operative in the inanimate world cannot explain the phenomenon of life.

Piaget

Piaget's theory of cognitive development emphasizes psychobiological together with environmental factors to explain how children acquire knowledge. He arrived at his ordered series of cognitive stages (sensorimotor, preoperational, concrete and formal operational) via clinical-diagnoses of children's behavior. Each stage extends the preceding cognitive stage and through maturation and environmental intervention the child reconstructs a new cognition level which surpasses the earlier stage. Through the process of what Piaget calls assimilation (consists of modifying and filtering information and experiences) and accommodation (child modifies or adjusts his internal patterns of understanding to fit the new reality), the child reorganizes his current insights so as to accommodate the new information.[41] Besides the necessary factors of maturation, experience and environment, the basic cause or facilitator of cognitive development, according to Piaget, is the child's mental oscillation between equilibrium/disequilibrium.[42] When the child learns new information, e.g., division of three digit numbers or fractions, he attempts to associate it with his present cognitive structure (cognitive development, knowing) which causes disequilibrium (frustration, anxiety). And as he attempts to gain understanding in relation to his existing

stage of knowledge he once again reestablishes a state of mental equilibrium and a new "cognitive structure", assimilation of the new information. Now the child has a somewhat, better or fuller understanding of the division process. Assimilation of the new information depends on the child's existing cognitive structure" and ability to'self-regulate' it, based on the factors of maturation, etc. The child's intrinsic motivation to learn is the result of developing new cognitive structures and the satisfaction in reestablishing mental equilibrium as self-regulated understanding is established. Piaget's cognitive theory, driven by what he calls psychogenesis (an integral part of embryogenesis), which only ends at adulthood, is shaped by the "intervention of social factors" (child's environment and experience).[43] The transition to higher levels of thinking ability, cognitive structures, within a cognitive stage--e.g., concrete operational, or to a higher stage of cognitive development, e.g. formal operational, somehow takes place through the process of assimilation and accommodation. Here the learner meshes the new information with his existing insights. As he accommodates the new information to fit the old, he mentally moves from a state of equilibrium to disequilibrium and once again to a new state of equilibrium. Hence to Piaget the mechanism for cognitive development is the movement and balance between equilibrium and disequilibrium.

Hence, Piaget's determinant of cognitive development is mental equilibrium. The child is actively involved in creating the state of disequilibrium and then eliminating it. Let us illustrate this process by using one of Piaget's clinical tests--the concept of "amount." A six year old child, who is at the preoperational level of cognition, is involved in direct perceptual relationships with a minimum of reasoning or thinking." He is not able to distinguish between how things look and how they really are. If the form of an object is changed, he thinks the quantity is different. For example, changing of one of two spherical clay balls of equal size into a sausage shape, the child does not understand that the sausage has the same quantity of clay as the ball from which it was rolled. The preoperational stage child will generally say the sausage shape is larger than the ball shape, even though he saw the experimenter roll the ball into a sausage. He cannot comparatively distinguish shape from size. The child is in a state of conflict, disequilibrium. He mentally swings between the ball and sausage shapes. Through the process of assimilation of information from his perception of the shapes and accommodation to existing understandings, he begins to simultaneously question whether the ball or sausage shape is larger. He compares the mental image, conceptualization (Piaget calls it conservation), of the ball's shape with the sense-perceptible or conceptualized sausage shape and arrives at the conclusion that the amount

of clay is the same, thus achieving equilibrium. Although Piaget's theory is based on psychobiological factors, is applied in a mechanical fashion. That is, he not only fails to explain how the child moves through the steps of assimilation, accommodation, equilibrium to a higher cognitive level(e.g., concrete operation), but rejects the idea of vital* or energy forces that could elucidate the dynamic "cause of cognitive development."[44] It is as if somehow these steps of cognition have an automatic, quasibiological life of their own--a cause and effect relationship. Piaget rejects the idea of a separate faculty or consciousness as a separate entity.

Steiner:

Steiner's cognitive theory like Piaget, also has biological scientific basis, but, in addition, it encompasses the relationship between body and mind. Research and psychosomatic medicine have established that a connection does exist, i.e., in the use of biofeedback and certain that patterns of thought may lead to specific illnesses.[45] However, the definitive connection between the two has not been clearly demonstrated nor have specific psychological therapies been discovered for certain illnesses such as high blood pressure or irregular

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*A doctrine that life has its own origin and support in some principle that is neither material nor organic, assumed to give rise to control of the phenomena of organic life.

heartbeat.[46] According to Schod, a Waldorf teacher and science and medical writer,

> Steiner was the first to make clear where (the connection) lies: between the psychological than the somatic level lies a realm unto itself, essentially different from the other two, a realm that can be apprehended neither by external sensory observation nor by psychological introspection: it is the activity of life.[47]

Steiner called this life activity--etheric energy or formative forces, which bring(s) every living being to life: and autonomous capacity to behave within matter, physical energy, space and time in a way different from that of the forces in lifeless objects, such as magnetism, and electricity.

Although one cannot perceive these life forces one can conceive them. They can be conceptualized logically in that "the concept of the etheric body or forces nevertheless makes the perceptible phenomena of life intelligible."[48] It provides an explanation--"a fundamental cause of organic development" Theories, models, and hypotheses are temporally used to explain phenomenological relationships we do not understand. In an effort to gain a fuller understanding, a model or theory is refined and differentiated. It becomes the criterion by which we test and judge the accuracy of our reasoning and provide a sufficient comprehension of the subject to facilitate inquiry and possible validation of the model. Is this not a valid approach for a theory of human development based on

invisible forces? After all, no one has ever seen magnetism, gravity, or electricity, only their results and effects. The same applies to the atomic theory; no one has seen an atom, electrons, neutrons, etc. Nevertheless, we borrow a model from the macrocosmic world--the planets and galaxy--to explicate our physical chemical world through the use of the atomic theory, which is a microcosmic model of the universe. These models or scientific theories become laws when they consistently explain physical phenomena. What is the etheric force model? The etheric, energy or bioplasmic forces as the Russians call them theory is based on the concept that all living matter is made up of an energy body and a physical body, as concluded by Russian scientists and homeopathic and acupuncture physicians. Apart from the bioplasmic theory, biologists developed a term"electrometabolic fields"--to explain the relationship between the electrical phenomenon and the metabolic processes in the body. The bioplasmic forces theory goes a step further; it is more comprehensive in its explanation of human development. Russian psychologists and scientists have discovered energy or "bioplasmic" forces to be the basis for human growth and development.

The Russian findings seem to give visible support to the premises of the Chinese art of medicine, acupuncture, which works on the same principle, that there are

energy-regenerative currents flowing throughout the body.* As discussed earlier, this energy is spent on the vital jobs of growing into maturity and cognitive functions and keeping the body chemistry and organs functioning properly. It changes the minerals of the body from an inert to an active state, facilitating the reproduction and regeneration of organs and body cells, etc. The energy used for maintaining bodily functions is measured as basal metabolism. The remainder is available for growth and activity. Basically, the source for this energy is food. However, other factors can affect it, such as physical health, emotional well-being, and the environment. Mental health can affect physical health and growth, just as physical health can affect our emotions, hence behavior.

Medical researchers have discovered that the body produces natural morphine like substances that operate on certain receptor sites in the brain and spinal cord. These natural internal opiums are called endorphines, secreted and used by the brain. Endorphines reduce the experience and screen out unpleasant stimuli. In fact, the presence of endorphines actually cause the feeling of well being. They also provides a substance, analgesia, that reduces physical pain.[50] Clinical science found through various experiments

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*Schod in his article "Scientific Thinking as an Approach to the Etheric" rejects the Russian experiments as unscientific in that the "etheric forces do not exist in the physical realm nor take the place of physical energy."[49]

that when people were unhappy, frustrated and depressed, the level of endorphines dropped. Pressure on children to learn before they are ready is very stressful. There is what Elkind calls, a depletion of "clock energy"--the energy we need for daily living. He concludes "the early symptoms of stress associated with clock energy: fatigue, loss of appetite and decreased efficiency."[51] When the pressure and the subsequent anxiety are unremittant, e.g., not able in keeping up with school work or are failing, children then use up their reserve of "calendar energy" (energy that is of a fixed quality for physical growth and maintenance of the body, etc.). The resultant psychosomatic ailments can be "headaches, stomachaches, etc. as well as making them unhappy and depressed, as a result of the drop in endorphines.[52]

On the other hand, when feelings of well being, happiness and confidence are present, endorphines increase. Hence, the reaction is cyclical--endorphines produce feelings of optimism and love and vise versa. "You are happy because you feel good and you feel good because you are happy. In turn, you have a feeling of control over your life, positive expectation and success because you have the energy to put into your efforts. This is exactly what Waldorf teachers attempt to accomplish through nonintellectual, non-stressful teaching methods, an artistic curriculum, compatible with the children's maturational level and interest, and a caring learning mileau created by

the continuous teacher, etc. Artistic activities, Eurythmy, an artistic form of movement (see chapter__), rhythmic, and a balanced day all contribute to enhancing and maintaining the Waldorf children's energy levels.

To return to our model. We also know that energy output varies with age. As we grow older we are less energetic and physically active, whereas the child has an abundance of energy. He expends much energy through growth, play, and other physical activity. We have observed this phenomenon in daily life, in the organic world. Russian scientists have explained it in new terms. They report they have actually photographed bioplasmic forces. Sheila Ostrander and Lynn Schroeder, who visited research centers in Russia, reported "a brand new concept in Soviet biology" in their book, Psychic Discoveries Behind the Iron Curtain.[53]

Russian experiments indicate that the energy body we are talking about is not just a chaotic system of particles but a unified body which acts as a holistic, structured, organized unit. Each organ of the body seems to have its own unified, specific etheric or bioplasmic forces. The forces are in continuous motion and metamorphosis. They are responsible for the maintenance of all the elements in the body to keep the organism going, and to keep it healthy. Their findings are in agreement with Steiner's explanation.

> All organs of the physical body are maintained in their form...underlying the physical brain an "etheric brain", and so on...(unlike the separate physical

organs) in the etheric everything is in living flow and interpenetrating movement.[54]

Acupuncture, as a means of correcting bioplasmic imbalance, is based on energy levels or current flow, which sustain the development and replacement of cells in the body. Chinese physicians state that the skin, liver, kidneys, etc., are temporary deposits for a number of energy current flows which move at various rates throughout the body. Recent physiological studies have shown that the liver is changed in 10 days, the tongue in a longer period. The substance of the brain takes longer, while it is six months before the new molecules are found in the bones. The hair and nails regenerate rapidly, whereas it takes seven years before all the skin cells have been replaced.

The basis of health, says the acupuncture physician, is the balance of energy currents in the body. "Good health is the free and unimpeded circulation of energy--the life forces--flowing from organ to organ along an invisible network of intercommunicating channels," which affects the flow of blood to the organs and tissues.[55] Illness is then the blockage and imbalance of the flow of these bioplasmic or etheric currents.* The insertion of needles in one or

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*Some physicians use acupuncture to relieve pain. Their interpretation of its use is not that of energy stimulation, but the impairment of pain by changing or blocking impulses to the brain.[56]

more of the energy centers or acupoints on the skin revitalizes and facilitates the energy current flow, putting the organism back in balance.[57] It is worth mentioning that these etheric forces appear to account for the phenomenon called "the phantom limb." Persons who have a missing leg or arm as the result of a birth defect or an accident can sense the missing limb. A study by E. Weinstein and his associates has shown that among 101 children born with missing limbs, 18 had a clear perception of phantom limbs.[58] George Von Arnim theorized that the bioplasmic phantom limb is a phenomenon that accounts for the equal rate of body scheme acquisition by limbless, sightless, and normal children.[59] In other words, the bioplasmic forces contain the pattern or framework of the species, the dynamic process or energy forces for growth. They facilitate the development of the physical limb when the physical material is present. The phantom or bioplasmic limb grows and develops just like the physical limb, except that it is nonmaterial, invisible. However, Bensen maintains the phantom pain phenomenon is partly psychological. He cites data that those born without or who lost a limb in infancy did not experience phantom pain. They had not established a total body image.[60]

On the other hand, the Russian scientists who photographed the bioplasmic body found that there appeared to be a reciprocal relationship between the energy forces and the physical body. Energy radiated from the physical

body and the physical body reflected what was happening in the energy.[61]

Another characteristic of etheric forces is their role in the repetition of structural parts in lower animals, e.g., the flatworm, cut in half, completely regenerates itself; the same is true of an amphibian's legs and the fins of a lungfish. As discussed earlier in regards to acupuncture higher animals and man also have regenerative powers in cellular structures (bones, muscles), outer cells (hair, skin, feathers), sensory organs (rods and retina of the eye), etc. Reproduction of one's own kind is an integral part of this repetitive process of the etheric body. Steiner also conceived of the etheric body as a spatial body, as in the physical body, and as a time-body, as in a series of stages of physical and mental development. "That which in biology is a stage of form or organism, is for the human being a phase of life filled with experience."[62]

The etheric forces or body provide the connection between earlier and later phases of life. Early childhood experiences can become predispositions for diseases or ill health in later life. Up to a point Steiner's and Piaget's theories of cognitive development appear to parallel one another; each has a biological basis and each has a series of stages which are based on the element of time. However, one of the major differences is that Piaget simply borrows biological principles to explain his stages of intellectual

development, while Steiner's theory of etheric forces not only provides a psychosomatic linkage between physical and intellectual development, but explains and is the cause for the sequential stages of cognitive development. The formative (etheric) forces of biological development are gradually released from the physical body and transmitted into powers of cognition. Steiner explains this dual connection,

> The forces present in the etheric body become forces of growth and differentiation...during the embryonic period. In the course of life some of these forces emancipate themselves from the formative active (physical growth) and become the forces of thought... Ordinary thought-forces of man are the refined forces of growth and differentiation.[63]

These freed forces of growth become the matrix for the formation of thoughts. This concept of growth forces transmuted into cognitive energy has been known in acupuncture and homeopathic medicine for years.[64*] Rudolf Steiner developed the concept over 70 years ago, and it is part of the learning theory and practices being used in the more than 500 Waldorf schools.

As outlined previously above Steiner's concept of human development is very complex and takes intensive study

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*Homeopathy, discovered by Dr. Samuel Hahnemann in 1796, is based on the principle of "like cure like". Homeopathy aids the body to cure itself by the administration of very small diluted doses of the proper medicine which produce natural energy-antibodies.

and time to grasp even a superficial understanding of the four members of man--physical, etheric, astral and ego bodies. To reiterate, Steiner, briefly describes the relationship of these bodies,

> The physical body as the coarsest structure, lies with the other bodies which mutually interpenetrate both it and each other. The etheric body fills the physical as a life form. the astral body (soul) extends beyond this on all sides. The physical and astral bodies are the carriers of the ego or "I" and in them it acts. Just as the physical body has its center in the brain, so the astral body (consciousness) its center in the ego.[65]

Waldorf education considers the relationship and balance of the various bodies in its pedogogical--therapeutic program. Knowledge of these bodies and the manifested symptoms is an integral part of the Waldorf training program and the knowledge base and repertoire of each teacher. Not only is there a physician on staff or is available, who is knowledgeable of Steiner's teachings, but the teachers are expected to have some medical knowledge also. In one of his lectures, Steiner replied to a question regarding the range of knowledge a Waldorf teacher should or must have. He said it was not necessary that Waldorf teachers be doctors,

> but they should certainly have some medical knowledge, as much as a teacher knows for his educational work....The natural consequence of this that the teacher has gradually to acquire insight into the whole human being (interworking of the four bodies, the symptoms, and the therapy), so that he is just as interested in every detail connected with physical health and sickness as he is in what is mentally sound or abnormal.[66]

These matters and individual children who have problems are appropriately discussed in the weekly college of teacher meetings. A discussion of the complex function of these four bodies, although they are an integral parts of Waldorf education, are beyond the scope of this book. The etheric body is being discussed because of its essential relationship to intellectual development and school readiness. It not only explicates the stages of cognitive development and the relationship between body and mind, but the theory sets Waldorf education apart from and unique to conventional educational practices and other school systems.

Readiness for School:

What does all this mean for the education of the child and readiness for schooling? As indicated, energy forces are used for human growth and maintenance of the body as well as for motor, emotional, and thinking activities. All of these require the expenditure of energy in one form or another. Each person has a certain amount of energy available. The crux of the argument regarding the damage that school does to children is that, as a result of an inappropriate curriculum, activities, and assignments, children's energy forces are displaced and atrophied prematurely, causing damage to their development. (See Elkind's comments regarding the dissipation of children's "clock" and "calendar" energy.)[67]

How does this occur? As every teacher knows, the most formative years of childhood are the first seven. They are

the ages of imitation, play, and physical activity. It is also the period when the greatest growth occurs. It is the time when the energy level is high and the etheric forces are concentrated mainly on physical growth. Physical growth progresses from head to toe; a baby's head grows before the torso, arms and legs. Movement and motor abilities also proceed from the head downward to the toes.[68] Motor and muscle development begin to dominate the head, neck, arms, abdomen and legs in a gradual progression. He gains greater and greater voluntary control over his movements, speech organization, and thinking. This theme of voluntary control is important to understanding the transformation of growth or energy forces.

The child at birth has no control over his chaotic eye, mouth, head, and neck movements. Movement control proceeds to the shoulders, arms, and hands; eye/hand coordination becomes possible. An infant is generally able to grasp objects by the third month. His speech changes from cooing to babbling. By the twelfth month he toddles and begins to walk. He has by this time developed a minimal level of control over his physical movements. Along with motor development comes speech development, which correlates better with motor development than it does with age. The child's speech development proceeds through the stages of cooing, babbling, saying (an expressing of inner needs and instincts--hunger, etc.-- and the imitation of words), naming, talking[69] At the same time, speech could also be

considered a finer form of motor movement (the lower jaw is a fifth limb, in a sense); the child gains greater mastery over his speech organization by the use of finer muscles of the mouth, tongue, lips, teeth, and larynx.

The rate of language development and vocabulary acquisition is slowed down when the child is struggling to master walking running, skipping, hopping, etc. The rate increases when his mastery over locomotion reaches a plateau; for example, at age to and a half to three, when he can jump with two feet, stand on one foot, tiptoe, and climb stairs using alternate feet, the child's vocabulary increases to a thousand words, understanding increases considerably, and his utterances are fairly correct grammatically.[70] As a result, there is a displacement of energy from gross motor control to the finer motor control of speech.

Karl Konig, founder of the Camphill Movement for the handicapped, also worked out a descent of the development of grammar in children from the "head to the toe"--from nouns to the cognitive, adjectives to the affective, verbs to the psychomotor, as follows:

	Age	Nouns	Adjectives	Verbs
Cognitive	1.3	100%		
Affective	1.8	78%	22%	
Psychomotor	1.0	63%	14%	23%

Hence, there seems to be a correlation between grammatical development and motor control.[71] Most children have

mastered much of their language's grammar by the age of four.[72]

Physical and speech development are controlled motor movement--one gross, the other fine. Thinking, which is a form of control over one's mind, is also a much finer and more subtle form of movement.

Piaget has shown that the minds of all children's evolve through a series of intellectual stages as they progress from early childhood through adolescence. He has classified these as follows:

1. Sensory-Motor Stage (0-2 years)
2. Preoperational Stage (2-7 years)
3. Concrete Operational Stage (7-12 years)
4. Formal Operational Stage (12-15 years and over)

Each of these stages has its own particular characteristics. Studies demonstrate that children's thinking shifts from the sense-bound to the emotional to rational forms of expression. The stages signify different centers of control. Piaget has devised tasks to determine the level of a child's thinking.

Before the shift from the preoperational to the concrete operational levels, the child "is involved in direct perceptual relationships with a minimum of reasoning or conceptual thinking." He is not able to distinguish between how things look and how they really are. If the form of an object is changed, he thinks the quantity is different. Using the earlier experiment--the changing of

one of two spherical clay balls of equal size into a sausage shape, as indicated, the child does not understand that the sausage has the same quantity of clay as the ball from which it was rolled. The preoperational child will generally say the sausage shape is larger than the ball, even though he saw the experimenter roll the ball into a sausage. The children cannot conserve (retain a mental image of the two clay balls), nor reverse their thinking (compare the sausage with its prior ball shape, which should be retained as a mental picture if they are mature enough). The child who has attained the concrete operational level of thinking is able to perform this and similar tasks successfully. Following is an outline of the mental characteristics of the three major stages:

Preoperational (2-7 years)

1. Cannot conserve (hold or mentally manipulate mental images)
2. Thinking is perceptual or sense-bound *
3. Thinking is nonreversible and centered
4. Cannot deal with variables, changes
5. Has little control (voluntary) over thinking

Concrete Operational (7-12 or 14 years)

1. Can conserve (hold mental images)

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*Child is able only superficially to explore or decenter all aspects of what he sees (stimuli). Cognitive activity is dominated by perceptual stimuli.

2. Thinking is bound to emotional or affective life, but operational
3. Thinking is reversible and decentered
4. Has greater voluntary control over thinking
5. Thinking is more pictorial than analytic
6. Needs concrete props to support problem solving
7. Can deal with only one conceptual variable
8. Evolves logical thought process that can be applied to concrete problems
9. Cannot solve hypothetical, problems that are entirely verbal.

Formal Operational (12-14 years and older

1. Thinking is under voluntary control, i.e., it is operational
2. Thinking is relatively free of physical and emotional life, more objective
3. Can manipulate two or more conceptual variables
4. Thinking is more flexible and symbolic
5. Predictive problem solving is possible without concrete props
6. Can manipulate symbols and concepts without outer perceptual props
7. Can solve hypothetical and verbal problems.

As one examines these three stages in terms of their developmental sequence, it appears that the theme of increased voluntary control over thinking processes (movement) is just as applicable as it was to physical locomotion and speech development. However, in the Piaget stages, movement in cognition is more refined, sophisticated, and subtle. These transitional periods, from preoperational to concrete, and from concrete to formal, are marked by definite physiological and biological changes.

The terms used by Piaget are appropriate; they accurately describe the thinking characteristics and abilities at each level. Preoperational means the child cannot operate (move) his thinking, joining mental image to

mental image, concept to concept, idea to idea. The child has not matured enough to be able to control his own thinking; he cannot reason. His thinking is nonoperational, uncontrollable, to a certain extent. At the concrete level, the older child can retain mental images and reverse his thinking; in short, his thinking is operational. He has control over his mind but needs concrete objects to solve problems. The same pattern of voluntarily controlled movements applies to change from the concrete to the formal operational level of thinking. Here the youngster can solve problems and predict solutions by making an educated guess--hypothesizing. He no longer needs concrete props to solve problems. He can solve such symbolic problems with several variables, e.g., when A is greater than B and B is greater than C, what is the relationship between A and C? His thinking is symbolic.

The post adolescent has developed full cognitive structures. He has control over the processes, essential to learning--assimilation, accommodation conservation, equilibrium and the development of new and broader cognitive structures (conceptualized knowledge). Broader fields of equilibrium (leading to more-complex cognitive structures) are facilitated by maturation (etheric energy), experience and the social environment. According to Piaget the formation of new "cognitive structures" is dependent on the child's own activity, essential in the creation and elimination of the state of "disequilibrium". As discussed

earlier, learning occurs, when the child through his own thinking processes (self regulation) evaluates and compares new information with his existing knowledge or cognitive structure. The child mentally oscillates between the state of equilibrium (status of existing knowledge) and disequilibrium (new infcrmation and inadequacy of present cognitive structure); and, if he has maturationally attained the appropriate cognitive level (concrete operational), then he attains equilibrium and a new cognitive structure. To perform these mental operations of Piaget, whether or not one agrees with his theory, requires energy, mental energy. To borrow a phrase, "it makes the perceptible phenomena of cognition intelligible."

Summary

To summarize, motor activity and the development of speech and thinking are dependent upon gaining voluntary control over these areas. The displacement and expenditure of energy are integral parts of the maturing process. Physical or organismic (total) maturation of the child is needed if he is to proceed through these stages at the proper rate.

The changes in thinking levels occur at about seven-year periods: preoperational (2-7), concrete operation (7-14), and formal operation (14 and older). The significance is that certain major physical changes or plateaus also occur in seven-year periods. These are the change of teeth (second dentition) at age seven and puberty

at approximately age 14. If we keep the theory of the transmutation of growth of energy forces in mind, it is no coincidence that at about age seven (average age, 6.8 years), second teething occurs about the same time as the child's thinking appears to shift from the preoperational to the concrete operational level of thinking.

As mentioned, earlier the criterion for first grade admission in the Waldorf school* is second dentition[73] Steiner explains, why,

> Up to the change of teeth, this etheric body of formative forces is most intimately bound up with the physical body. There, from within, it organizes the physical body; it is the force that drives out the teeth. When the human being gets his second teeth, the part of the etheric body that drives out the teeth has no more to do for the physical body...with these etheric forces we carry on free thought that begins to assert itself from the seventh year onward.[74]

There have been few studies substantiating the correlation between second dentition and cognitive development. An earlier study by Olsen suggested a relationship between teething and organismic age.[75] Only Ilg's and Ames' clinical study of 80 children showed a significant (.05) relationship between children's school readiness and second teething.[76]

Those children who were ahead of schedule in teething (96%) were ready for, and could profit from, academic school

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*"Some parents balk at emphasis on the teeth as a pivotal symbol--though most accept that an important change takes place at this time."

experiences. Of those children who were behind schedule in teething, 54% should have repeated (22% of this group did repeat), and 40% would have profited by repetition. Of those children who were in-between--nether ahead nor behind schedule in teething, 64% would have benefited by repetition (14% of this group did repeat; 36% were hard workers, doing well). The study indicates that subsequent to teething the children seemed to have reached a higher level of mental development--the concrete operational level of thinking.

A follow-up investigation by Silverstro in 1975 only partially supported the findings of Ilg and Ames. Although his correlation coefficients were low (.33 - .45), some were statistically significant on many subtests.[77] For example, first and second grade boys with the greatest number of second teeth exhibited fewer behavioral problems, had greater learning skills, higher reading scores and more concept conservation attributes (characteristic of Piaget's concrete operational stage) than their peers with fewer second teeth. However, Silverstro found the correlation between teething and readiness appeared to be higher for boys than girls. This is understandable in that six year old girls have at least a six month maturational lead on boys. By age twelve girls are one year ahead of boys maturationally. However, none of these investigators implied a cause and effect relationship between teething and other maturational indices, as Steiner did.

What does this signify for Steiner's theory of maturation and energy forces? It means that one can interpret that second teething is an indication of the culmination of physical growth of the head. The head had reached a plateau of physical maturation. The brain has reached 95% of its development, the head two-thirds of adult proportion and continues to grow in mass until age 25. Although the visual sensory functions develop more rapidly then the emotional and cognitive functions, after age two the latter functions accelerate and attain adult proportion by age six[78] Studies found progressive correlates between cortical electrical changes, brain maturation and cognitive development.[79] One could infer that Steiner's etheric forces or growth energy plays a significant role in the transition from preoperational to concrete operational thinking. The energy forces are to a certain degree completing their task in the physical development of the head and brain. The growth forces are then released (gradually) from physical growth for the processes of thinking (subtle movement); this accounts for the transition from preoperational (noncontrollable) to concrete operational (controllable) thinking in the child. The child now has greater voluntary control over his thinking processes.

Bayley noted a dramatic transition from relatively stable and quiet mental activity between ages five and seven to accelerated cognitive growth at age seven continuing to

ages ten-eleven.[80] Both Bigelow and L'Abate found a relatively abrupt change at age seven from, what Piaget calls, global or intuitive-precognition or preoperational thinking to analytic or logical (cause and effect reasoning), concrete operational thinking.[81, 82]

This same relationship applies to the onset of puberty and the child's change from the concrete operational to the formal or rational level of thinking. J.D. Nisbet found that in England those adolescents who attained puberty scored higher on intellectual and academic achievement tests than those youngsters who were still at the prepuberty stage of development.[83] During this time there is a growth spurt; the teenager is reaching adult proportions. The energy or growth forces are then released to be used for the higher level of formal operational thinking. There has not been much research on this level. However, there are indications that there is a delay in the attainment of the formal operational level of thinking even after the attainment of puberty. Physical maturation seems to have raced ahead of mental development at this later stage. No one really knows the reason; further research is needed. Except since the mid 19th century European boys' voice changed and the girls reached menarche earlier.[84] There is also evidence that adult or formal operational thinking develops later than the onset of puberty.

Thus far we have attempted to rationally extrapolate the idea of etheric or energy forces as the biological cause

for physical and cognitive development and the psychosomatic linkage between mind and body. Using Piaget's stages of cognition, the etheric force theory or model appears to provide a more intelligible understanding of these developmental stages, school readiness and the consequences of forced or premature formal learning for young children. The purpose was to develop a conceptual rationale for Steiner's etheric or energy forces.

Importance of Etheric Forces

And why are these etheric forces important in the educational process? The reason is that, as indicated, they (formative or etheric forces) are the vehicle for concept and thought formation--cognition. Ideas and thoughts live within and are processed and transformed by the etheric energy, as described using Piaget's theory.

How does this apply to Waldorf education? The purpose and the methodology of Waldorf education is to educate the child in terms of this psychophysiological-readiness. This means the teacher's task is to sustain and nurture the formative forces in the appropriate manner (via conducive teaching methods) and time so as not to violate or disrupt the child's natural course of development and its health. (As you recall, the energy forces are also responsible for and working on the child's physical and psychological development.) Until the age of 14-15 or puberty the teacher works on the etheric forces indirectly, through psychomotor,

rhythmic and artistic activities--pictorial presentations,* parables, narrations and art, respectively. It is not until the attainment of puberty and adolescence (formal operational level) that the teacher can teach to or directly work on the etheric forces by a more intellectual and problem solving approach.

The underlying idea of the Waldorf method is to keep the prepuberty child as young as possible as long as possible via the nurturing of these energy forces. According to Steiner, this keeps the child's whole being (mental capacities, etc.) more supple, impressionable and open for the subtle nuances of the Waldorf educational process.

He warns that

> if we force intellectual powers in the child we arrest growth, but we liberate the forces of growth if we approach the intellect by the way of art...the teaching is first pictorial and nonintellectual.[85]

To make an analogy, picture three lumps of clay; the first lump is dried out and hard, the second is moist, and the third is wet and mushy. One's ability to mold each of the three requires a different approach and effort. The first lump requires a hammer and chisel to make an impression, the second could be molded with one's hands, and the third by means of subtle touching and perhaps even

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*This does not mean movies, slides, T.V. or pictures in textbooks, but through mental picture forming, imagination and emotional involvement.

blowing on it with one's breath. It is the latter and perhaps the second state malliability-pliability that Waldorf education wishes to maintain and attain as far as the child's intellectual development is concerned.* For example, young children learn languages and to play musical instruments much easier than at a later age. Steiner believes that induced learning at this age not only brings the child to a false intellectual maturity, but the child's physical maturation is accelerated.

> certain organic forces ...(which) tend to harden the body are brought into play...are responsible for salty deposits in the body for the formation of bone, cartilage and sinew...have a tendency to become overly rigid.[88]

In the early years it is the teacher's task to transform intellectual knowledge into a more digestible form "by speaking to the child's imagination in pictures and stories in color, rhythm and music."[88] Harwood, one of the founders and a teacher in the first Waldorf School in England, explains,

> Indeed with children--especially younger children--imagination is often almost purely a matter of memory. It is the nature of feeling in which memory lives to transform what it contains and it is not right to call on children to perform exercises of memory unless the stream of feeling has been previously filled with pictures and stories by the teacher.[89]

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*It was reported to the author that a study was done prior to World War II, which compared the onset of puberty of Waldorf to state school girls. It was found the Waldorf girls attained menarche one to one and a half years later than their public school counterparts.[87]

Intellectual subject matter, reading and writing, are transformed into an emotional-artistic experience. When imagination is heightened, experience is heightened, memory is heightened. Imagination breathes creative life into memory. Knowledge is not only experienced by the child on his own terms, but it is allowed to grow, be ever new, as the child matures when a subject(s) is taken up in a new form in the later grades. The seeds of imagination are sown, e.g., in the study of nature and man through tales, mythologies and folklore in the early year. The child's understanding of and interest in the study of botany and zoology deepens in the upper grades. Barnes describes how geometry is experienced and reexperienced at sequential levels of development.

> Geometry is experienced in motion. The first grader runs the forms of a triangle, circle, square, pentagram in space. He knows with his entire body how different the turn of a right angle is from that 60° of an equilateral triangle. Keeping distance from the center at every point on the circumference of a circle requires will power, attention, control and it is the experience through the body that says "circle" to the seven year old mind.
>
> (The experience of geometry is continued with form (freehand) drawing and awakened again in the sixth and seventh grades through geometric constructions--**drawings, geometric string models.** Exact and beautiful constructions are developed with colored pencils. What was originally an encounter with geometric forms through the child's body and will in the sphere of the aesthetic, chiefly hands are active, acquiring discipline and skill. The constructions are practical, not yet abstract, but the laws speak more clearly to the child's dawning comprehension.
>
> As the young person awakens to his new intelligence, geometry is reborn in the encounter with the self-sustaining truth of geometric laws experienced as thought-forms. The learning is not abstract and dry.

> What was experienced through the body as a perceptual whole and reexperienced with artistic appreciation in the elementary grades resounds in the logical experience of the high school years.[90]

Steiner conceived the human being as having three levels of consciousness-thinking (awakened-consciousness), feeling (dream consciousness), and willing (sleeping or physical-consciouness).* Each is associated physiologically with the head or the brain; the "central organs of rhythm, heart and lungs"; and the psychomotor system, the limbs and movement, respectively. Each of the levels of consciousness appear sequentially in the child from the limbs to the head--willing, feelings to thinking.

Although the three levels of consciousness may appear to have separate functions, they are intimately related and interactional. For example, when we are enthusiastic about completing a project, the feeling passes over into thought to plan the procedure which translates into action. The forces of thinking, feeling and willing are intermingled at almost every moment of our waking consciousness. The three work together.

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*Will is defined as the impulse to act; accomplished feeling or thinking, or adoption and implementation of a line of action. When we "will" to think only the thought appears in our consciousness, not the process or mechanism the act of "willing" itself, the cause of the activity that produces the movement, remains totally submerged in the sub or sleeping consciousness.

There are two counter directional but complementary forces working in the child: the formative forces of growth working from the head downward, and the awakening of the conscious from the limbs upward--will activity (ages 0-7) affective (ages 7-14) and intellectual consciousness (ages 14...).

Waldorf Education:

What makes Steiner education different from contemporary public and private schools is the way the child is approached pedagogically. While most schools approach the child's intellect directly, teaching abstract, intellectual concepts, Waldorf education teaches the whole child by taking into consideration his maturational development and the different realms of consciousness. Even according to Piaget and Gesell the child does not attain maturity in thinking (formal operational) until ages 14-15, and even later.* Educators ignore the child's level of cognitive immaturity and lack of readiness for intellectual learning. Miseducation occurs because the well-founded research on child development, as mentioned, is discarded. Waldorf education circumvents the dilemma between teaching

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*Several studies have shown that only ten percent of seventh through twelfth grades attained adult or formal operational thinking. Even by the twelfth grade, two thirds of the students were not ready for many of the courses in math and the natural sciences, such as chemistry and physics.[91]

methodology and readiness by educating the predominate or matured consciousness or "way of knowing" at each developmental level. Hence, Steiner education is not really interested in teaching the child intellectually until the intellect has matured, at the onset of puberty. Steiner's idea is to educate the preadolescent child's intelligence, which involves nurturing the formative forces, indirectly via imitation and physical activity during the first seven years and through the child's feelings in the second seven year period. It is only when the child attains the age of puberty is the intellect dealt with directly.

Let us examine Steiner's stages of intelligence or consciousness in some detail.

I. Physical-consciousness Stage--(0-7 years)

During the first seven years the three bodies--etheric (energy forces) astral (soul, consciousness) and the ego (self-consciousness) are immersed in the physical body.* The

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*(1) Physical or corporal body, composed of minerals is subject to the laws of nature. (2) Etheric body, discussed earlier, is the cause for the phenomena of growth, cognition reproduction, builder and molder of the physical body. It is the emancipator of intelligence from the physical body at age seven (change of teeth) and ages 14-15, onset of puberty.

(Footnote Continued)

etheric formative forces or body are absorbed in organic functions and the building up of the physical body.

Regarding the counter-directional forces of growth and consciousness, the formative forces of growth, although flowing downward, concentrate on the development of the head. While consciousness streams upward in the organism, it penetrates the entire physical, making the child a sensorial being. The child in the early years is a "sense organ"; he is "instinctively aware of everything that goes on around him, especially in regards to people", not so much through the senses of seeing or hearing but through "a cognition that is immersed in feelings"[93] and the physical body. The child absorbs his surroundings without conscious contemplation or reflection. All that occurs in the child's physical environment expresses itself in the physical organism. The child's non-personal consciousness extends

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(Footnote Continued)
(3) Astral body, an ancient term adopted by Steiner, is the soul, inner life, conscious of man and animal. Includes the sentient feelings and sensations, instincts, passions, desires, wishes, intentions, etc.(4)Ego-- sets man apart from animal. It defines man as an individual and personality, designated by "I". Permeation of the ego gives man the gift of cognition, self-consciousness and intelligible speech, the child the ability to stand upright, walk, control over psychomotor functions and cognition. The ego, like the other bodies (soul and etheric),is gradually released from its total entrenchment in the physical body. At ages 0-7, the ego is embedded in the etheric body and at ages 14 and over, the ego is established in the soul or astral body. "What we have, then, is a continuous permeation of the human organization by the ego."[92]

beyond his physical body. The child is a sense organ--a sensorial sponge, if you will. Steiner claims that certain predispositions to diseases are established in early childhood. "Diseases of the metabolic system are the result of unkind treatment while the child is learning to walk", digestive problems are the result of untruthfulness, and nervous disorders arise from confused thinking in the environment.[94] "Everything that takes place in its environment imprints itself on its physical-bodily form and works on the whole organism, the lungs, the stomach, the liver, and so forth; so that our behavior will influence its disposition to health or disease for the whole of its life."[95]

Janov, in The Feeling Child, states, "It is not only the mind that preserves or remembers, it is the entire body. This is because the body and mind (consciousness) are a unit."[96]

From the fifth to the seventh year, there is a gradual freeing of the formative forces from the development of the circulatory and respiratory systems and their reappearance as faculties of memory and imaginative-thinking (beginning of concrete operational). A further loosening of the etheric or formative forces occurs with the change of teeth, at about age seven, upon their (energy forces) development of the metabolic system and the lower extremities. During this period the child's consciousness and intelligence is progressively lifted from the confinement of the physical

body into the freed vehicle of formative or etheric forces, which are still integrally bound to the child's life of feelings or consciousness.* As emphasized, the chief concern of Waldorf pedagogy in the elementary grades is "the etheric body of man."[97] Steiner's stages of development are based on the nurturing and gradual loosening of the formative forces of growth from the physical body, which fluctuates between the processes of organ building and that of personality development.[98]

Let us briefly examine the role of the formative etheric forces in Steiner's theory of intelligence or consciousness and stages of development. The process is complex and difficult to explicate in a comprehensive manner. Also, it is difficult to find the proper or conventional terminology to label each of the developmental stages. Steiner, himself, disliked labels and would have changed them if he could have found more suitable terms. For example, he said he would give his philosophy anthroposophy another name if a more appropriate title were available. In reference to the traditional occult term astral body for the "soul", "You must not be jarred by expressions" he said, "words must be employed for everything; they are merely terms."[99] He also rejected the

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*The child's consciousness at this stage is imaginative and pictorial, not intellectual or abstract.

idea of using the terms of unconscious, subconscious and conscious to describe his levels of knowing or consciousness--willing, feeling and thinking, because all exhibit a different type of consciousness. This is the dilemma the author is in, finding the right terminology for consciousness, the etheric body, etc.

II. Feeling-consciouness Stage -- (7-14 years)
(Affective realm or Soul)

At this stage the forces of growth are being released from the development of the head, culminating in second dentition, now concentrating on the development of the respiratory and circulatory systems, while consciousness flows upward to include feeling-thinking (concrete operational).

At age seven, second teething occurs; the formative forces of growth are now set free and transformed into cognitive functions, making possible the transition from preoperational to concrete operational thinking. According to Steiner, these (forces) also release the feeling life of the child, not judgment and thought, not abstract, conceptual or hypothetical cognition associated with adults. His thinking is more emotional and pictorial than intellectual or abstract because of its relationship with

his inner-life of feelings (astral body or soul)*[100]. The astral body or feelings, as Steiner called it in his later lectures, releases itself much later from the physical body, not until puberty, age 14-15 years, as signified by the change of voice and physiological changes in both boys and girls. Following second dentition, the formative forces, which were primarily working on the development of the head (as described earlier in this chapter) are released for further development of the respiratory, circulatory system and digestive systems and the associated muscular and skeletal structure. Steiner adds,

> Between the seventh and fourteenth year the child's feelings-life is still inwardly bound up with its physical organization...all the feelings of joy, of pain and of sorrow that expresses themselves in the child still have a physical correlation with the secretions of the organs, the acceleration or retardation, speed or slackening of the breathing system.[101]

Because of the integral relationship between the physical body, and the formative forces of growth and the emotional life of the child at this stage, too great a demand on the intellect can cause a weakening of the organs of breathing and circulation of the blood...in later years"[102]. Extraordinary demands to perform intellectual tasks for which they are not yet capable use up energy reserves. Steiner says,

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*See footnote, page 48 for further explanation of astral body.

> If I give an intellectualistic education before puberty, if I offer abstract concepts or ready-made, sharp outlined observations and not growing living pictures...I am doing violence to the self within him.[103] ...(and) if we demand intellectual concepts and responses too soon,...(the child is brought to a false maturity.[104] ...and, sows the seed of premature arterial sclerosis."[105]

Salye, who studied the effects of stress on children and adults, concludes, "anxiety and worry burn up energy--cause loss of weight...cardiac infractions, gastric, ulcers, hypertension..."[106] Steiner also warned, "Typewriting has a very harmful effect, especially on the activity of the heart. Children should not be allowed to do it at all."[107*] What would Steiner say about the prevalent use of microcomputers in the elementary or primary grades today? (In the Waldorf Schools, microcomputers are not introduced until the junior and senior years of high school.)

Steiner held that man's emotional life is bound more to the rhythmical processes of the respiratory (systole and diastole) and circulatory systems than to the nervous system. Breathing and blood circulation are influenced by one's emotions. For example, embarrassment makes one blush; fear makes one pale; heart rate accelerates with excitement;

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*The author is unaware of any research findings on the effect of typing on one's health. Recent investigations have found that VDT operators have higher incidents of mental and eye strain and expectant mothers, miscarriages.

and breathing rate vacillates with expressions of astonishment and relief. These physiological reactions are triggered by one's thoughts, emotions and actions. This psychosomatic, sympatical relationship is intensified in the maturing elementary school child.

As far as Steiner is concerned, education at this stage should appeal to the child's emotional life in the form of pictorial images and imagination (to complement not only the child's natural liveliness and sense of movement, but the psychosomatic relationships between his affective life and the rhythmical processes inherent in his maturing respiratory and circulatory systems). If you recall, the formative forces are facilitating the development of these systems during this period. And the way to help and nurture these formative or etheric forces is through the child's life of feeling or feeling-consciousness. The educator is working only indirectly on the formative forces of growth.

To explain, Steiner - believed that before the change of teeth what the child absorbs from and perceives in the people in his environment works "plastically upon the interior of his organism in a subtle and delicate sense." After the change of teeth, the perceived images and experiences manifest themselves in the child's emotions, the subsequent rhythmic system and the formative forces of development.

From ages nine to twelve, there is a subtle transformation from the absorption of the experiences,

emotionally, to the independent conception of images as being external to himself. The dawning of awakened or intellectual consciousness emerges.

The goal is to help the child pass over "to intellectual education by the way of artistic education." Subjects must be introduced in an artistic way. Steiner explains,

> For this reason we place, at the Waldorf School, value upon the artistic rather then the intellectual training at the beginning of the school life. The teaching is first pictorial, non-intellectual; the relation of the teacher to the child is pervaded by a musical, rhythmic quality, and by such methods we achieve the degree of intellectual development. The mental training in this way becomes, at the same time, the very best training for the physical body[108]. The intellectual is drawn elementally out of the artistic."[109]

Children and adults alike are drawn to pictures, illustrations, magazines, cartoons, television, etc. However, movies and television are more of a passive rather than an active activity. The images are complete. On the other hand, listening to stories told by a friend or on a radio program requires imagination to transpose the words into mental pictures or scenarios. Although each person hears the same narration, his mental images are different. It is this latter form of pictorial thinking to which Steiner refers. The preadolescent, in particular, longs for pictures and imagery. Gesell's findings show that children's strong interest in comic books begins at about age six, culminates at ages eight to nine and diminishes at ages ten to eleven.[110] In a circuitous fashion Piaget seems

to confirm the pictorial quality of children's thinking. At age seven the child decenters his perceptions and shifts to the transformation of pictorial-concepts or mental pictures. The child's cognitive mobility is substantiated by his shift from perceptual decision to cognitive and logical decision making and the ability to conserve and to reverse his thinking.

It is not the conceptions that work on the formative forces of growth, but what the child perceives in terms of imaginative pictures and allegories. Regardless of the subject, "the presentation must live--it must speak to the child's experience". In Steiner education the process includes perception; then perception becomes feeling (experience); and out of feeling (experience) the concept evolves. "These are the three steps in every genuine learning process."[111]

One of the basic rules in Steiner education is that the child should not become fatigued as a result of the teaching process. Steiner's rationale, based on his three fold nature of man, is: 1) a steady diet of intellectual makes one tired and bored, particularly children who have not reached intellectual maturity, 2) continuous physical exercise and play causes exhaustion, but 3) rhythmical, artistic and musical activities "never tire the child."[112]

Steiner reasons,

> The rhythmic organism can never tire. For just think, you breath all day. Your heart beats at night as well as in the day. It never stops but until death. The rhythm of it has to go on all the time...It never gets tired at all. In education...you...address...the system (that is) predominate in man, thus between the change of teeth and puberty. You must address yourself to the rhythm in the child by using (a pictorial, artistic presentation). The result...the child never gets tired, because you are engaging his rhythmic system and not his head.[113] (And the child is not as stressed.)

Instead of addressing the child's intellect directly, conceptually, a base of experience knowledge is established through the vehicle of feelings, unencumbered by unripe intellectual judgement. These experiences become the basis of memory. Steiner felt there was nothing wrong with a child committing, e.g., historical events to memory, even though not fully understood as long as he experienced them affectively. He explains,

> First there must be the assimilation of historical events through memory, then the grasping of the connection between them. It is...not only necessary to remember what he already knows, but to come to understand what he already knows--this is, what he has acquired by memory in the way the child acquires a language.[114]

In a sense the child is learning in such a natural way that he does not realize that he is learning in the formal sense. The author recalls an experience in Germany where a Waldorf first grader responded to her parent's question about what she had learned today. She said, "I learned the letter "K" today." The little girl had taught herself to read a year before attending school. But she had fun learning the letter "K", not being cognizant she already

knew the alphabet. At twelve years of age there is a gradual transformation from the feeling-consciousness, pictorial imagery to awakened-consciousness, mental concepts-- concrete to formal operational--at puberty. "The head rather than the heart now become the bearer of thinking and all the characteristics of intellectual thought begins."[115]

III. Awakened-consciousness - (14...)

(Intellectual-Abstract Thinking)

At this stage, the formative forces are completing the development of the physical body; the feeling life (astral body or soul) is released from its intimate attachment to the physical body and the growth forces and now the latter evolve as free and independent forces for awakened (formal operational) consciousness. Therefore, the formative forces of growth that had been collaborating with the other three members in the development of the physical body are set free for the activity of intellectual thinking.

> A significant part of those forces that have been otherwise engaged are freed for learning, and the child's consciousness, which was at first active in the sphere of the will, and then awoke in the life of feeling, now ascends at last into the pure realm of thought.[116]

Puberty signified changes in physical emotional and mental development. Although it is generally believed this is a period of abrupt or rapid growth and emotional

eruption, like other human traits, few, if any, conform to a given average or theory. Studies show the physical growth spurt for boys occurs from 12 to 16 and girls from 10 to 14 years of age however, demonstrate three types of growth: continuous growth (23%), surgent growth (35%), tumultuous growth (22%) and 22 percent. Although not easy to classify, they were somewhere between continuous and surgent growth. Also the reported emotional upheaval at the onset of puberty has not been supported by research. Only those with the tumultuous growth pattern showed measures of emotional turmoil, which, in some cases, was the result of home problems, value conflicts with parents and teachers and social influences.[117]

The onset of puberty, accompanied by an accelerated growth in height, weight, skeletal changes, widening of the hips and shoulders, size of hands and feet and muscular strength, is being reached earlier in recent decades. In 1840 girls attained the age of menarche at 17, now it is 12.8 years. However, cognitive development, (formal operational thinking), as measured by Piaget's tests and the intellectual ability of adolescents to handle the abstract thought required in high school and college courses--algebra, calculus, philosophy, etc., appears later than the attainment of puberty. Renner, et.al., found only 34 percent of twelvth graders attained formal operational thinking.[118] While McKinnon's study showed that 50 percent

of students entering college could handle abstract thought.[119]

The decreased age of puberty in both boys and girls has been attributed to better health care, diet, living standards and intercultural and racial marriages in some cases. Steiner believes it is also the result of an over stimulating environment and the intellectualized education, particularly in the early years.[120]

Again, the delayed maturation would probably not affect the ability of adolescents, who had attended a Waldorf School from the outset, to master the more intellectual subjects. Although the Waldorf teacher's appeal is to the adolescent's intellectual understanding, problem solving abilities and reasoning insight, the subject is not totally new. The student experienced the same basic material in the lower grades, albeit in a different form and level. As Barnes, explains it, "What was experienced pictorially, in a more artistic way, in the elementary years, now has to be reviewed, analyzed, and tested in the light of the newly emerging power of personal, logical understanding."[121] It is studied with a more mature insight. One could also extrapolate that a child who began his education in a Waldorf school may not experience the early onset of puberty nor the apparent gap between physical growth spurt and intellectual development.

Steiner education differs from more popular educational approaches--public and private. The latter sets such

general and specific goals as "to develop the individual to his fullest capacity" or "to discover and nurture creative talent", they generally have little or no impact on the individual child. It is much like saying to develop the "computer" to its fullest capacity. The phrase is meaningless unless you have expert and detailed working knowledge of the computer. Steiner claims that with detailed knowledge of the working and interaction of the four bodies, particularly the role of body of formative growth forces and the reflected symptoms, it is possible to nurture, treat and influence the child's psychophysiological development. As indicated, Waldorf teachers are not only expected to know their class of children intimately, but also to possess a respective amount of medical knowledge to fulfill the objectives of Waldorf education. The continuing teacher, the artistic, therapeutic, maturational-readiness, based methods of teaching, and the integrated, core curriculum that develops skills, capacities, competencies and self esteem, together with the personal care given to each student by the class teacher, the college of teachers in the weekly meetings and the school physician, etc., all attest to the school's attention to detail regarding the educational welfare of each child and the implementation of Steiner's educational indications.

Steiner wrote that teaching must be approached with real and detailed knowledge.

So for the art of education it is the knowledge of the

> members of man's being and of their several development which is important. We must know on what part of the human being we have especially to work at a certain age and how we can work upon it in the proper way.[122]

It is this attention to the detail development of the child and the conceptual model or theory of formative forces that the teachers work with in their teaching that makes Waldorf education unique. The Waldorf method is comprehensive and very complex,but studied as a whole, it gives greater insight into and a better understanding of school-readiness, stages of cognition and human development. The theory of formative or etheric forces not only provides the biological link between physical and mental development, but it makes the processes more intelligible. It is a holistic approach that preserves the integrity of the developing human individual. It is what differentiates it from other methods that separate intellectual development from the whole person as he proceeds through their educational systems.

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